

## DETAILED ACTION

### *Status of the application*

*This is the second office action after RCE*

*Claims 1-3, 15, 16, 22, 24 are cancelled. Claims 4, 26 amended.*

*Claims 4-14, 17-21, 23, 25 and 26 are presented for examination*

### *Claim Objections*

1. Claim 25 is objected to because of the following informalities: Claim 24 is cancelled therefore claim 25 cannot be depended on claim 24. It should be claim 4. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. **Claims 4-14, 17-21, 23, 25 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Putzig et al.(US6,066,714) in view of Gutmann ("**New Catalyst system for producing polyethylene terephthalate and their effects on light resistance**" 1989. translated from the German paper by Gutmann in the IDS, Gutmann is one of the inventor) .

Regarding claims 4 and 26. Putzig (714) teaches esterification process of a dicarboxylic acid compound, having about 2 to 30 carbons, linear or branched, and an alcohol (Col 6, ln 10-50) with a titanium complex catalyst in an amount of 0.1 to 100

ppmw. (Col6, line 18-68, col7, line 40-45). He does not teach the complex Na/Ti glycolate catalyst. Gutmann discloses a complex glycolates with  $\text{Na}^+ [\text{Me}(\text{glycolate})]_{n+1}^-$  where Me is Ti, Ge, Al. And the catalyst has poor solubility in ethylene glycol due to precipitation to gel formation. The subject matter as a whole would have been obvious for one of ordinary skill in the art at the time of the invention to substitute the catalyst of Putzig with the complex glycolate catalyst of Gutmann to provide a good reaction accelerating effect in polymerization with improvement in production and strength. As for the claim of polymeric and n is 8 to 200, Gutmann's titanium glycolate has n +1 which is a polymer with n is any integer which encompasses 8 to 200.

2. Regarding claims 5, 6, 7. Putzig in view of Gutmann disclose a process of claim 4, wherein R contains 4 to 15 carbons, such terephthalic acid, isophthalic acid, naphthalic acid, succinic acid, adipic acid, glutaric acid, oxalic acid and maleic acid.

(col 6, ln 35-45)

3. Regarding claim 8. Putzig teaches esterification process using an alcohol and an oligomer having repeating units derived from an organic acid or ester such as carboxylic acid (Col 6, line 15).

4. Regarding claim 9, 10, 17. Putzig discloses the alcohol of the formula  $\text{HO-R-OH}$  or  $\text{HO-[R-O]}_n$  wherein R is an alkyl group having 1 to about 12 carbons such as ethylene glycol, butylene glycol, 1-methyl propylene glycol, pentylene glycol and combinations thereof. (Col6, ln 50-67).

5. Regarding Claims 11, 12, 13. Putzig specifically teaches a process temperature of 250-300C under a pressure of 0.001 to about 10 atmospheres, with a molar ratio of the alcohol to the carbonyl compound of 1:1 to 10:1. The teachings encompass the instant claims (Col 7, line 22-35).
6. Regarding Claim 14 and 19, 20 21 and 23. Putzig teaches catalyst amount of about 0.1-100ppm prior to addition to the reaction mixture or in situ i.e., in the process feed (Col 7, line 43). The claim is 1 to 15 ppm which are overlapped .
7. Regarding claim 18. Putzig teaches a ratio of 1:1 to about 3:1 of alcohol to dicarboxylic compound (Col 7, line33).
8. Regarding claim 25. Putzig in view of Gutmann teaches a process of esterification of claim 1 wherein the catalyst is a Na/Ti polymeric glycolate. Both do not disclose that the titanium glycolate is soluble in an alkali metal glycolate. However, it would be obvious that the titanium glycolate is soluble in an alkali metal glycolate to form a complex catalyst mixture.

#### ***Response to Arguments***

9. Applicant's arguments filed July 05/17/2010 have been fully considered and are persuasive. However as claims 4 and 26 are amended, new rejections on new grounds are necessary despite the telephone interview on May 17, 2010 on amendments of the claims to further prosecution. With the new submitted IDS and with further examining the Gutmann prior art, the potential allowance as discussed has to be withdrawn as claim 4 was amended without the ratio of Na/Ti glycolate. As claims 4 and 26 are about a process of esterification of a dicarboxylic compound and an alcohol by

contacting the process feed with a Na/Ti glycolate catalyst of which Putzig already discloses the process and Gutmann teaches the catalyst therefore it would be obvious for one of ordinary skill in the art at the time of the invention, to replace Putzig's catalyst with Gutmann's catalyst to further improve the efficiency of the process as Gutmann discloses that his catalyst will speed up the polymerization with improvement in viscosity, tear resistance and strand elongation. Furthermore, with the new submitted IDS of Matsumoto (US2005/0176986, 08/11/2005) , it is clearly that the claimed process with the Na/Ti glycolate catalyst is not novel therefore the rejection under 35 USC 103(a) is deemed necessary.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **US2005/0176986, US5017,680 and US5016944.** Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLETTE NGUYEN whose telephone number is (571)270-5831. The examiner can normally be reached on Monday-Thursday, 10:00-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Mayes can be reached on (571)-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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